Quantitative chemistry

Unscrambling definitions is a fun way to test and consolidate learners' understanding of key terms and definitions. Instruct learners to piece together the definitions and use their understanding of the terms to complete sentences. Answers are given below and also provided as slides. Like the accompanying Frayer models, unscrambling definitions probe learners' understanding and target the trickier terms in the key terms list.

Ideas for adaptation

Integrate speaking and listening skills into this activity:

- Print the unscrambling definitions grid and cut around the individual boxes. Learners each take a box and as a class or group, arrange themselves into the various definitions. When everyone is ready, each learner reads out their own part of the definition in turn.
- For a quicker adaptation, consider doing a think, pair, share activity where learners discuss and decide on the correct definitions in pairs or small groups.
- Ask learners to read out the connection completion slide in full

Provide more support by linking the term in column A to the correct entry in column B, and perhaps the entry in column B to the correct entry in column C, for the first few key terms in the grid.

Read more about unscrambling definitions and their use: rsc.li/3Gda32t

Answers

These are also supplied on the accompanying slides.

Unscrambled definitions

A **limiting reactant** is completely used up in a chemical reaction, which therefore limits the amount of products that can be formed.

Excess reactant is not used up in a chemical reaction because another reactant has run out first.

Atom economy is the mass of the desired product given as a percentage of the total mass of the reactants, in a balanced symbol equation.

Percentage composition is the relative mass of the atom(s) of one element in a compound, given as a percentage of the relative formula mass.

A **mole (mol)** is the unit of amount of substance, where one mole is 6.02×10^{23} (Avogadro's number) of atoms, molecules or formula units.

Avogadro's number is the number 6.02×10^{23}, which is the number of atoms, molecules or formula units in one mole of the substance.

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The **end point** in a titration is the exact volume added when the indicator changes colour.

The **titre** is the volume of solution added from the burette that is needed to reach the end point.

Connection completion answers

Learners should choose row D as the correct connections for the sentences.

D	as a result of	consequently	however

Completed sentences:

In a titration, a neutralisation reaction occurs, and the end point is determined **as a result of** a colour change in the indicator. The titre allows us to calculate the number of moles of the chemical in the burette which **consequently** enables us to calculate the number of moles in the solution of unknown concentration. If, **however**, the end point is overshot, there will excess reactant remaining and the titre reading will be incorrect.

Other key terms support resources

This resource is part of the key terms support for the **quantitative chemistry** topic. Find the following accompanying resources at rsc.li/3Gi9HHN:

- Key terms list – carefully selected vocabulary, with definitions, that learners will come across when studying this topic at this stage
- Accessible glossary – expand on the key terms list with diagrams, examples, pronunciation guides and more
- Frayer models – a way for learners to organise their understanding of a new piece of vocabulary by working through four conceptual quadrants: explore, break down, explain, consolidate.

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